AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-31. (canceled)

32. (currently amended) A heat-sensitive medium for the separation of species in a separating channel, comprising: an electrolyte in which at least a set of block copolymers is dissolved, said block copolymers being provided in said electrolyte at a sufficient concentration to confer to said medium the ability to reversibly transit from a viscosity state V1, obtained at a temperature T1, to a viscosity state V2 which is at least 100% higher than V1, obtained at a temperature T2 ~~which is at least 20°C higher than T1~~ between 40°C and 80° C,

wherein said block copolymers comprise on average, in their structure at least

- a first polymeric segment which is soluble in the electrolyte at the temperatures T1 and T2, and

- more than two additional non-contiguous polymeric segments exhibiting an LCST in said electrolyte and having an average number of atoms along their main chain which is greater than 50.

33. (previously presented) The medium according to Claim 32, wherein the temperature T1 is between 15°C and 30°C.

34. (canceled)

35. (previously presented) The medium according to Claim 32, wherein the viscosity V2 is greater than the viscosity V1 by at least a factor equal to 5 at the viscosity V1.

36. (previously presented) The medium according to Claim 32, wherein the LCST is at least 10% in mass average of said segments with LCST is between T1 and T2.

37. (previously presented) The medium according to Claim 32, wherein all the segments with LCST represent between 2% and 25% of the total average molar mass of the copolymers.

38. (previously presented) The medium according to Claim 32, wherein all or some of said polymeric segments with LCST possess along their skeleton an average number of atoms greater than 75, or an average molecular mass greater than 2 500 Dalton.

39. (previously presented) The medium according to Claim 32, wherein all or some of said block polymers exist in the form of linear block polymers.

40. (previously presented) The medium according to Claim 32, wherein said block polymers exist at least partially in the form of comb copolymers comprising a main chain and side chains, whose main chain consists of at least one of said first polymeric segment.

41. (previously presented) The medium according to Claim 32, wherein all or some of the copolymers possess an average

number of said additional polymeric segments per chain greater than 5.

42. (previously presented) The medium according to Claim 32, wherein all or some of the copolymers possess a molecular mass greater than 30 000 Dalton or a number of atoms along the main chain greater than 2 000.

43. (previously presented) The medium according to Claim 32, wherein all or some of the copolymers possess a molecular mass of between 50 000 Dalton and 3 000 000 Dalton or a number of atoms along the main chain of between 2 500 and 100 000 Dalton.

44. (previously presented) The medium according to Claim 32, wherein all or some of the copolymers possess an average number of atoms along a section of first polymeric segment, between two consecutive binding points of said soluble segment with said additional polymeric segments, greater than 210.

45. (previously presented) The medium according to Claim 32, wherein all or some of said polymeric segments with LCST are derived from one or more copolymers selected from the group consisting of

- polyvinyl alkyl ethers,
- hydroxyalkyl celluloses,
- homopolymers of ether oxides,
- random and block copolymers of ether oxides,
- alkylene homo- and copolymers, and

- polyacrylic derivatives wherein said polyacrylic derivatives are derived from the homopolymerization or copolymerization of monomers chosen from acrylic and methacrylic acids, alkylacrylates and methacrylates, N-alkyl-acrylamides or -methacrylamides, N',N-dialkyl-acrylamides or -meth-acrylamides, aryl-acrylamides or -methacrylamides and alkylaryl-acrylamides or -methacrylamides.

46. (previously presented) The medium according to Claim 32, wherein the polymeric segment(s) soluble at the temperatures T1 and T2 consist of at least one polymer selected from the group consisting of polyethers, polyesters, soluble random copolymers and homopolymers of polyoxyalkylene, polysaccharides, polyvinyl alcohol, polyvinylpyrrolidone, polyurethanes, polyamides, polysulphonamides, polysulphoxides, polystyrenesulphonate, substituted or unsubstituted polyacrylamides or polymethacrylamides which are soluble in said electrolyte.

47. (previously presented) The medium according to Claim 32, wherein said block copolymer is selected from the group consisting of

- copolymers of the comb copolymer type whose main chain includes acrylamide, acrylic acid, acryloylaminoethanol or dimethacrylamide and on which there are grafted side segments of the poly(N-alkyl or N,N-dialkyl)acrylamide type, or side segments of the random or block, polyoxyethylene/oxypropylene

copolymer or polyoxypropylene type, or side segments of the polyether type, and

- copolymers of the block copolymer type exhibiting along their main chain an alternation of segments of the polyoxyethylene type and of segments of the polyoxypropylene type, or an alternation of segments of the polyoxyethylene type and of segments of the polyoxybutylene type or an alternation of segments of polyethylene and of segments of the polyether type which are more hydrophobic than polyoxyethylene.

48. (previously presented) The medium according to Claim 32, wherein said block copolymer is selected from the group consisting of:

polyacrylamide/poly(N-isopropylacrylamide) (PAM-NIPAM), polyvinylalcohol/poly(N-isopropylacrylamide) (PVA-NIPAM), polyoxyethylene/polyoxypropylene, poly-acrylamide/oxyethylene-oxypropylene copolymer, poly-acrylamide/polyoxypropylene, polyacrylic acid/ polyoxypropylene, polyacrylic acid/oxyethylene-oxypropylene copolymer, polyacrylic acid/poly(N-isopropylacrylamide), and polydimethylacrylamide/poly(N-isopropylacrylamide) (PDMAM-NIPAM).

49. (currently amended) The medium according to Claim 32, which transits from a viscosity V1 of between 50 and 1 000 $mPa.m^{-1}.s^{-1}$ (SI unit) at a temperature T1 of between 15 and 30°C to

a viscosity V2 which is greater than V1 by a factor of between 2 and 50 at a temperature T2 of the order of 40°C or higher and comprises between 5 g/100 ml and 20 g/100 ml of copolymers possessing

- an average molecular mass of between 30 000 Dalton and 2 000 000 Dalton or a number of atoms along the main skeleton of between 1 000 and 60 000,
- a fraction by mass of segments with LCST of between 2% and 20%, and
- an average molecular mass of the segments with LCST of between 2 000 Dalton and 20 000 Dalton or an ~~avarage~~ average number of atoms along a segment with LCST of between 35 and 350.

50. (previously presented) The medium according to Claim 32, which transits from a viscosity V1 of between 100 and 10 000 $mPa.m^{-1}.s^{-1}$ at a temperature T1 of between 15 and 30°C to a viscosity V2 which is greater than V1 by a factor of between 2 and 100 at a temperature T2 of the order of 40°C or higher and comprises between 1 g/100 ml and 8 g/100 ml of copolymers possessing

- an average molecular mass of between 500 000 Dalton and 3 000 000 Dalton or a number of atoms along the main skeleton of between 7 000 and 90 000,

- a fraction by mass of segments with LCST of between 2.5% and 15%, and

- an average molecular mass of segments with LCST of between 4 000 Dalton and 30 000 Dalton or an average number of atoms along a segment with LCST of between 60 and 600.

51. (previously presented) The medium according to Claim 32, which transits from a viscosity V1 of between 100 and 10 000 $mPa.m^{-1}.s^{-1}$ (SI unit) at a temperature T1 of between 15 and 30°C to a viscosity V2 which is greater than V1 by a factor of between 2 and 100 at a temperature T2 of the order of 40°C or higher and comprises between 0.1 g/100 ml and 5 g/100 ml of copolymers possessing

- an average molecular mass greater than 500 000 Dalton or a number of atoms along the main skeleton greater than 7 000,

- a fraction by mass of segments with LCST of between 2% and 15%, and

- an average molecular mass of the segments with LCST greater than 4 000 Dalton or an average number of atoms along a segment with LCST greater than 90.

52. (previously presented) The medium according to Claim 32, wherein said copolymer is present in said medium and the copolymer concentration is less than 20 g/100 ml.

53. (previously presented) The medium according to Claim 32, further comprising an adjuvant selected from the group

consisting of particles, water-soluble polymers, nonthermothickening associative polymers, and surfactants.

54. (currently amended) A method for the separation or analysis of species chosen from molecular or macromolecular species, nucleic acid analogues obtained by chemical synthesis or modification, proteins, polypeptides, glycopeptides and polysaccharides, organic molecules, synthetic macromolecules or particles such as mineral particles, latex, cells or organelles comprising the steps of providing a separation channel filled with a ~~medium according to claim 32;~~ heat-sensitive medium for the separation of species in a separating channel, comprising an electrolyte in which at least a set of block copolymers is dissolved, said block copolymers being provided in said electrolyte at a sufficient concentration to confer to said medium the ability to reversibly transit from a viscosity state V1, obtained at a temperature T1, to a viscosity state V2 which is at least 100% higher than V1, obtained at a temperature T2 which is at least 20°C higher than T1, wherein said block copolymers comprise on average, in their structure at least a first polymeric segment which is soluble in the electrolyte at the temperatures T1 and T2, and more than two additional non-contiguous polymeric segments exhibiting an LCST in said electrolyte and having an average number of atoms along their main chain which is greater than 50; introducing in said separation channel the sample

containing said species; and performing separation of said sample by applying a field able to transport at least some of said species inside said medium.

55. (previously presented) The method according to Claim 54, further comprising sequencing DNA.

56. (previously presented) The method according to Claim 54, further comprising involving a medium which transits from a viscosity V1 of between 50 and 1 000 $mPa.m^{-1}.s^{-1}$ (SI unit) at a temperature T1 of between 15 and 30°C to a viscosity V2 which is greater than V1 by a factor of between 2 and 50 at a temperature T2 of the order of 40°C or higher and comprises between 5 g/100 ml and 20 g/100 ml of copolymers possessing

- an average molecular mass of between 30 000 Dalton and 2 000 000 Dalton or a number of atoms along the main skeleton of between 1 000 and 60 000,
- a fraction by mass of segments with LCST of between 2% and 20%, and
- an average molecular mass of the segments with LCST of between 2 000 Dalton and 20 000 Dalton or an average number of atoms along a segment with LCST of between 35 and 350,

to separate molecules having a molecular mass of less than 50 000 Dalton or oligonucleotides comprising less than 100 nucleotides, or native or denatured proteins.

57. (previously presented) The method according to Claim 54, further comprising involving medium which transits from a viscosity V1 of between 100 and 10 000 $mPa.m^{-1}.s^{-1}$ at a temperature T1 of between 15 and 30°C to a viscosity V2 which is greater than V1 by a factor of between 2 and 100 at a temperature T2 of the order of 40°C or higher and comprises between 1 g/100 ml and 8 g/100 ml of copolymers possessing

- an average molecular mass of between 500 000 Dalton and 3 000 000 Dalton or a number of atoms along the main skeleton of between 7 000 and 90 000,
- a fraction by mass of segments with LCST of between 2.5% and 15%, and
- an average molecular mass of segments with LCST of between 4 000 Dalton and 30 000 Dalton or an average number of atoms along a segment with LCST of between 60 and 600,

to separate products of reaction of DNA sequences, DNA duplexes of less than 1 000 base pairs, denatured proteins or synthetic or natural polymers having a molecular mass of between 20 000 Dalton and 1 000 000 Dalton.

58. (previously presented) The method according to Claim 54, further comprising involving medium which transits from a viscosity V1 of between 100 and 10 000 $mPa.m^{-1}.s^{-1}$ (SI unit) at a temperature T1 of between 15 and 30°C to a viscosity V2 which is greater than V1 by a factor of between 2 and 100 at a temperature

T2 of the order of 40°C or higher and comprises between 0.1 g/100 ml and 5 g/100 ml of copolymers possessing

- an average molecular mass greater than 500 000 Dalton or a number of atoms along the main skeleton greater than 7 000,
- a fraction by mass of segments with LCST of between 2% and 15%, and
- an average molecular mass of the segments with LCST greater than 4 000 Dalton or an average number of atoms along a segment with LCST greater than 90,

to separate DNA duplexes having a size of between 500 bases and several millions of base pairs, or particles.

59. (previously presented) The method according to Claim 54, further comprising the following steps:

- introducing this medium into a separating channel of an electrophoresis apparatus in a sufficient quantity to constitute its separation medium, said separating channel being maintained at a temperature close to temperature T1;
- thermostating a significant proportion of the channel at a temperature close to T2, either prior to or following the introduction of a sample;
- introducing a quantity of sample at the inlet of the separating channel;
- carrying out the separation at a temperature of the order of T2 in a thermostated portion of the channel; and

- detecting the migration of the analytes initially contained in the sample.

60. (previously presented) The method according to Claim 54, wherein said method takes place in an automated electrophoresis apparatus.

61. (previously presented) The method according to Claim 54, wherein said method takes place in a microfluidic system.

62. (currently amended) A capillary electrophoresis device comprising~~, as separation medium according to Claim 32~~ one or several capillaries or channels, wherein at least one dimension of said capillaries or channels is smaller than one millimeter, and wherein said capillaries or channels are at least partly filled with a separation medium, wherein said separation medium is a heat-sensitive medium for the separation of species in a separating channel, comprising an electrolyte in which at least a set of block copolymers is dissolved, said block copolymers being provided in said electrolyte at a sufficient concentration to confer to said medium the ability to reversibly transit from a viscosity state V1, obtained at a temperature T1, to a viscosity state V2 which is at least 100% higher than V1, obtained at a temperature T2 which is at least 20°C higher than T1, wherein said block copolymers comprise on average, in their structure at least a first polymeric segment which is soluble in the electrolyte at the temperatures T1 and T2, and more than two additional non-

contiguous polymeric segments exhibiting an LCST in said electrolyte and having an average number of atoms along their main chain which is greater than 50.

63. (currently amended) The medium according to Claim 53, wherein said copolymer concentration is between [[-]]0.1 g/100ml and 8 g/100 ml.

64. (previously presented) The method according to claim 54, wherein said macromolecular species is a biological macromolecular species selected from the group consisting of DNA, RNA and nucleotides.

65. (previously presented) The method according to claim 55, wherein said particles are selected from the group consisting of latexes, whole cells, whole chromosomes, and organelles.